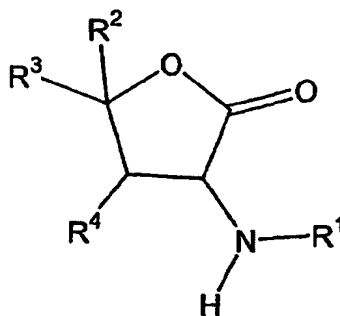


Claims:

1. Use of at least one substituted γ -lactone compound of the general formula I,

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in which

10 R^1 denotes an optionally at least mono-substituted 2-pyridyl, 2-pyrimidyl, 2-pyrazolyl, 2-quinolinyl or 2-pyrazinyl residue, which may also be fused with a saturated or at least partially unsaturated hydrocarbon ring system,

15

R^2 denotes an optionally at least mono-substituted, saturated, branched or unbranched aliphatic C_{1-10} residue or an optionally at least mono-substituted, at least partially unsaturated, branched or unbranched
20 aliphatic C_{2-10} residue,

R^3 denotes an optionally at least mono-substituted aryl residue,

25

R^4 denotes H,

or

5 R^3 and R^4 together denote an optionally at least mono-substituted, saturated or at least mono-unsaturated aliphatic C_{3-7} residue, with the proviso that the residue R^2 in this case denotes an optionally at least mono-substituted aryl residue, an optionally at least mono-substituted, saturated, branched or unbranched
10 aliphatic C_{1-10} residue or an optionally at least mono-substituted, at least partially unsaturated, branched or unbranched aliphatic C_{2-10} residue,

15 in the form of the racemates, diastereomers or enantiomers thereof as a free base or of a corresponding physiologically acceptable salt for the production of a pharmaceutical preparation for the treatment of migraine.

20 2. Use according to claim 1, characterised in that R^1 denotes an optionally at least mono-substituted 2-pyridyl-residue, which may also be fused with a saturated or at least partially unsaturated hydrocarbon ring system, preferably denotes a 2-
25 pyridyl residue which is substituted at least in position 4.

30 3. Use according to claim 1 or 2, characterised in that R^2 denotes an optionally at least mono-substituted, branched or unbranched C_{1-6} -residue.

- 42 -

4. Use according to one of claims 1 to 3, characterised in that R³ denotes an optionally at least mono-substituted aryl residue and R⁴ denotes H.

5 5. Use according to one of claims 1 to 4, characterised in that the compound used of the general formula I according to claim 1 comprises at least one compound selected from the group consisting of

10 5-(2,4-Dimethyl-phenyl)-3-(8-hydroxy-quinolin-2-ylamino)-5-methyl-dihydro-furan-2-one,

5-(3,4-Dimethyl-phenyl)-3-(4,6-dimethyl-pyridin-2-ylamino)-5-methyl-dihydro-furan-2-one,

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5-(2,4-Dimethyl-phenyl)-3-(4,6-dimethyl-pyridin-2-ylamino)-5-methyl-dihydro-furan-2-one,

20

5-(4-Cyclohexyl-phenyl)-3-(4,6-dimethyl-pyridin-2-ylamino)-5-methyl-dihydro-furan-2-one,

5-(3,5-Dimethyl-phenyl)-3-(4,6-dimethyl-pyridin-2-ylamino)-5-methyl-dihydro-furan-2-one,

25

5-(3,4-Dimethyl-phenyl)-5-methyl-3-(4-methyl-pyridin-2-ylamino)-dihydro-furan-2-one,

5-(2,4-Dimethyl-phenyl)-5-methyl-3-(4-methyl-pyridin-2-ylamino)-dihydro-furan-2-one,

30

5-(4-Cyclohexyl-phenyl)-5-methyl-3-(4-methyl-pyridin-2-ylamino)-dihydro-furan-2-one,

- 43 -

5-Methyl-3-(quinolin-2-ylamino)-5-m-tolyl-dihydro-furan-2-one,

5 3-(4,6-Dimethyl-pyridin-2-ylamino)-5-methyl-5-p-tolyl-dihydro-furan-2-one,

3-(4,6-Dimethyl-pyridin-2-ylamino)-5-methyl-5-m-tolyl-dihydro-furan-2-one,

10 3-(4,6-Dimethyl-pyridin-2-ylamino)-5-(4-ethoxy-phenyl)-5-methyl-dihydro-furan-2-one,

4-[4-(3-Bromo-5-methyl-pyridin-2-ylamino)-2-methyl-5-oxo-tetrahydro-furan-2-yl]-benzonitrile,

15 3-(3-Bromo-5-methyl-pyridin-2-ylamino)-5-(4-tert-butyl-phenyl)-5-methyl-dihydro-furan-2-one,

20 5-(4-tert-Butyl-phenyl)-5-methyl-3-(6-propyl-pyridin-2-ylamino)-dihydro-furan-2-one,

5-(4-tert-Butyl-phenyl)-5-methyl-3-(4-methyl-3-nitro-pyridin-2-ylamino)-dihydro-furan-2-one,

25 3-(5-Bromo-6-methyl-pyridin-2-ylamino)-5-methyl-5-(4-phenoxy-phenyl)-dihydro-furan-2-one,

5-(4-tert-Butyl-phenyl)-5-methyl-3-(3-nitro-pyridin-2-ylamino)-dihydro-furan-2-one,

30 3-(3-Benzyloxy-pyridin-2-ylamino)-5-methyl-5-(4-phenoxy-phenyl)-dihydro-furan-2-one,

- 44 -

3-(3-Benzyloxy-pyridin-2-ylamino)-5-(4-tert-butyl-phenyl)-5-methyl-dihydro-furan-2-one,

5 3-(4,6-Dimethyl-pyridin-2-ylamino)-5-methyl-5-(4-phenoxy-phenyl)-dihydro-furan-2-one,

5-(4-tert-Butyl-phenyl)-3-(4,6-dimethyl-pyridin-2-ylamino)-5-methyl-dihydrofuran-2-one,

10 5-Methyl-3-(4-methyl-pyridin-2-ylamino)-5-(4-phenoxy-phenyl)-dihydro-furan-2-one,

5-(4-tert-Butyl-phenyl)-5-methyl-3-(4-methyl-pyridin-2-ylamino)-dihydro-furan-2-one,

15

4-[4-(5-Bromo-3-nitro-pyridin-2-ylamino)-2-methyl-5-oxo-tetrahydro-furan-2-yl]-benzonitrile,

20 4-[4-(5-Bromo-pyrimidin-2-ylamino)-2-methyl-5-oxo-tetrahydro-furan-2-yl]-benzonitrile,

5-Benzo[b]thiophen-2-yl-5-methyl-3-(6-propyl-pyridin-2-ylamino)-dihydro-furan-2-one,

25 3-(4,6-Dimethyl-pyridin-2-ylamino)-5-(4-isopropyl-phenyl)-5-methyl-dihydro-furan-2-one,

5-Benzofuran-2-yl-3-(4,6-dimethyl-pyridin-2-ylamino)-5-methyl-dihydro-furan-2-one,

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5-Benzo[b]thiophen-2-yl-5-methyl-3-(4-methyl-pyridin-2-ylamino)-dihydro-furan-2-one,

- 45 -

5-Benzofuran-2-yl-5-methyl-3-(4-methyl-pyridin-2-ylamino)-dihydro-furan-2-one,

5 3-(5-Benzo[1,3]dioxol-5-yl-5-methyl-2-oxo-tetrahydro-furan-3-ylamino)-1H-pyrazole-4-carbonitrile,

10 3-(5-Benzo[1,3]dioxol-5-yl-5-methyl-2-oxo-tetrahydro-furan-3-ylamino)-1H-pyrazole-4-carboxylic acid ethyl ester,

5-Benzo[1,3]dioxol-5-yl-5-methyl-3-(3-nitro-pyridin-2-ylamino)-dihydro-furan-2-one,

15 3-(4,6-Dimethyl-pyridin-2-ylamino)-5-methyl-5-(5,6,7,8-tetrahydro-naphthalen-2-yl)-dihydro-furan-2-one,

20 3-(4,6-Dimethyl-pyridin-2-ylamino)-5-methyl-5-naphthalen-2-yl-dihydro-furan-2-one,

5-Benzo[1,3]dioxol-5-yl-5-methyl-3-(4-methyl-pyridin-2-ylamino)-dihydro-furan-2-one,

25 5-Methyl-3-(4-methyl-pyridin-2-ylamino)-5-(5,6,7,8-tetrahydro-naphthalen-2-yl)-dihydro-furan-2-one,

5-Benzo[1,3]dioxol-5-yl-5-methyl-3-(5-methyl-pyridin-2-ylamino)-dihydro-furan-2-one,

30 5-Benzo[1,3]dioxol-5-yl-5-methyl-3-(6-methyl-pyridin-2-ylamino)-dihydro-furan-2-one,

- 46 -

3-(5-Bromo-3-nitro-pyridin-2-ylamino)-5-methyl-5-(5,6,7,8-tetrahydro-naphthalen-2-yl)-dihydro-furan-2-one,

5 3-(5-Bromo-3-nitro-pyridin-2-ylamino)-5-isopropyl-5-phenyl-dihydro-furan-2-one,

5-Isopropyl-3-(5-nitro-pyridin-2-ylamino)-5-phenyl-dihydro-furan-2-one,

10

5-Methyl-5-naphthalen-2-yl-3-(5-nitro-pyridin-2-ylamino)-dihydro-furan-2-one,

15

5-Isopropyl-5-phenyl-3-(pyrimidin-2-ylamino)-dihydro-furan-2-one,

3-[5-(4-Iodo-phenyl)-5-methyl-2-oxo-tetrahydro-furan-3-ylamino]-1H-pyrazole-4-carboxylic acid ethyl ester,

20

5-(4-Bromo-phenyl)-3-(5-bromo-pyridin-2-ylamino)-5-methyl-dihydro-furan-2-one,

3-(3-Bromo-5-methyl-pyridin-2-ylamino)-5-methyl-5-naphthalen-1-yl-dihydro-furan-2-one,

25

5-Methyl-5-naphthalen-1-yl-3-(6-propyl-pyridin-2-ylamino)-dihydro-furan-2-one,

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5-(3-Chloro-phenyl)-5-methyl-3-(6-propyl-pyridin-2-ylamino)-dihydro-furan-2-one,

5-(3-Chloro-phenyl)-5-methyl-3-(4-methyl-3-nitro-pyridin-2-ylamino)-dihydro-furan-2-one,

5-(4-Bromo-phenyl)-5-methyl-3-(4-methyl-3-nitro-
pyridin-2-ylamino)-dihydro-furan-2-one,

5 3-(5-Bromo-6-methyl-pyridin-2-ylamino)-5-methyl-5-
naphthalen-1-yl-dihydro-furan-2-one,

3-(5-Bromo-6-methyl-pyridin-2-ylamino)-5-(4-iodo-
phenyl)-5-methyl-dihydro-furan-2-one,

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3-(3-Benzyloxy-pyridin-2-ylamino)-5-(4-iodo-phenyl)-5-
methyl-dihydro-furan-2-one,

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3-(3-Benzyloxy-pyridin-2-ylamino)-5-(4-bromo-phenyl)-
5-methyl-dihydro-furan-2-one,

3-(4,6-Dimethyl-pyridin-2-ylamino)-5-(4-iodo-phenyl)-
5-methyl-dihydro-furan-2-one,

20

5-(3-Chloro-phenyl)-3-(4,6-dimethyl-pyridin-2-
ylamino)-5-methyl-dihydro-furan-2-one,

5-(4-Bromo-phenyl)-5-methyl-3-(3-methyl-pyridin-2-
ylamino)-dihydro-furan-2-one,

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5-(4-Bromo-phenyl)-5-methyl-3-(4-methyl-pyridin-2-
ylamino)-dihydro-furan-2-one,

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2-[5-(3,5-Dimethoxy-phenyl)-5-methyl-2-oxo-tetrahydro-
furan-3-ylamino]-4-propyl-pyrimidine-5-carboxylic acid
ethyl ester,

3-(4-Bromo-1H-pyrazol-3-ylamino)-5-(3,5-dimethoxy-phenyl)-5-methyl-dihydro-furan-2-one,

5 3-(4-Bromo-1H-pyrazol-3-ylamino)-5-(2-methoxy-phenyl)-5-methyl-dihydro-furan-2-one,

3-[5-(2,5-Dimethoxy-phenyl)-5-methyl-2-oxo-tetrahydro-furan-3-ylamino]-1H-pyrazole-4-carbonitrile,

10 3-[5-(2,5-Dimethoxy-phenyl)-5-methyl-2-oxo-tetrahydro-furan-3-ylamino]-5-methylsulfanyl-1H-pyrazole-4-carbonitrile,

15 5-(2,5-Dimethoxy-phenyl)-5-methyl-3-(pyridin-2-ylamino)-dihydro-furan-2-one,

5-(2-Methoxy-phenyl)-5-methyl-3-(pyridin-2-ylamino)-dihydro-furan-2-one,

20 3-(3-Chloro-5-trifluoromethyl-pyridin-2-ylamino)-5-(3,5-dimethoxy-phenyl)-5-methyl-dihydro-furan-2-one,

3-(3-Chloro-5-trifluoromethyl-pyridin-2-ylamino)-5-(2,5-dimethoxy-phenyl)-5-methyl-dihydro-furan-2-one,

25 3-(3,5-Dichloro-pyridin-2-ylamino)-5-(2-methoxy-phenyl)-5-methyl-dihydro-furan-2-one,

30 3-(3-Chloro-5-trifluoromethyl-pyridin-2-ylamino)-5-(2,4-dimethoxy-phenyl)-5-methyl-dihydro-furan-2-one,

3-(4,6-Dimethyl-pyridin-2-ylamino)-5-(3-methoxy-phenyl)-5-methyl-dihydro-furan-2-one,

3-(4,6-Dimethyl-pyridin-2-ylamino)-5-(4-methoxy-phenyl)-5-methyl-dihydro-furan-2-one,

5 5-(3,4-Dimethoxy-phenyl)-3-(4,6-dimethyl-pyridin-2-ylamino)-5-methyl-dihydro-furan-2-one,

5-(4-Methoxy-phenyl)-5-methyl-3-(4-methyl-pyridin-2-ylamino)-dihydro-furan-2-one,

10

5-(2,5-Dimethoxy-phenyl)-5-methyl-3-(pyrazin-2-ylamino)-dihydro-furan-2-one and

15

5-Methylsulfanyl-3-(2-oxo-5-phenyl-5-propyl-tetrahydro-furan-3-ylamino)-1H-pyrazole-4-carbonitrile

and the corresponding physiologically acceptable salts thereof, preferably the hydrochlorides thereof.

20

6. Use of at least one substituted γ -lactone compound of the general formula I according to one of claims 1 to 5 for the production of a pharmaceutical preparation for the treatment of septic shock.

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7. Use of at least one substituted γ -lactone compound of the general formula I according to one of claims 1 to 5 for the production of a pharmaceutical preparation for the treatment of neurodegenerative diseases.

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8. Use according to claim 7 for the production of a pharmaceutical preparation for the treatment of multiple sclerosis.

- 50 -

9. Use according to claim 7 for the production of a pharmaceutical preparation for the treatment of Parkinson's disease.
- 5 10. Use according to claim 7 for the production of a pharmaceutical preparation for the treatment of Alzheimer's disease.
- 10 11. Use according to claim 7 for the production of a pharmaceutical preparation for the treatment of Huntington's chorea.
- 15 12. Use of at least one substituted γ -lactone compound of the general formula I according to one of claims 1 to 5 for the production of a pharmaceutical preparation for the treatment of inflammation.
- 20 13. Use of at least one substituted γ -lactone compound of the general formula I according to one of claims 1 to 5 for the production of a pharmaceutical preparation for the treatment of inflammatory pain.
- 25 14. Use of at least one substituted γ -lactone compound of the general formula I according to one of claims 1 to 5 for the production of a pharmaceutical preparation for the treatment of cerebral ischaemia.
- 30 15. Use of at least one substituted γ -lactone compound of the general formula I according to one of claims 1 to 5 for the production of a pharmaceutical preparation for the treatment of diabetes.

- 51 -

16. Use of at least one substituted γ -lactone compound of the general formula I according to one of claims 1 to 5 for the production of a pharmaceutical preparation for the treatment of meningitis.

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17. Use of at least one substituted γ -lactone compound of the general formula I according to one of claims 1 to 5 for the production of a pharmaceutical preparation for the treatment of arteriosclerosis.

10

18. Use of at least one substituted γ -lactone compound of the general formula I according to one of claims 1 to 5 for the production of a pharmaceutical preparation for wound healing.

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19. Use of at least one substituted γ -lactone compound of the general formula I according to one of claims 1 to 5 for the production of a pharmaceutical preparation for the treatment of neoplastic diseases.

20

20. Use of at least one substituted γ -lactone compound of the general formula I according to one of claims 1 to 5 for the production of a pharmaceutical preparation for the treatment of fungal diseases.